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PUTTER

TECHNICAL FIELD OF THE INVENTION

This invention relates in general to the field of sporting equipment and, more particularly, to an improved golf putter.

BACKGROUND OF THE INVENTION

The putting stroke is widely accepted to be the most critical aspect of the game of golf. Because of the precision required it is also one of the most difficult skills to master. Modern teachers of putting techniques typically agree that the more a putting stroke relies on the large muscles of the body and relies less on the hands and wrists the more consistent the putting stroke will be. Unfortunately, typical putter designs do not promote a wrist-less pendulum-type putting stroke. In addition, conventional configurations for putters do not facilitate the use of the putter for shots which are not on the green but in green-side rough.

SUMMARY OF THE INVENTION

Accordingly, a configuration for a new putter is disclosed that addresses some of the disadvantages and shortcomings with conventional putter configurations.

5 According to one embodiment of the present invention
a putter head configuration is disclosed that comprises a
unitary milled body with substantially planar faces. The
body of the putter head may comprise, for example, a
high-grade titanium alloy or stainless steel such that
10 the putter head mass together with a very upright lie is
sufficient to encourage a pendulum-type stroke. In
addition, the putter head configuration may comprise a
toe face, a back face and a heel face which a highly
skilled player may use for particular shots such as shots
15 from green-side rough.

BRIEF DESCRIPTION OF THE DRAWINGS

5 A more complete understanding of the present invention may be acquired by referring to the accompanying figures in which like reference numbers indicate like features and wherein:

FIGURE 1 is a perspective drawing of a putter configuration constructed according to one embodiment of the present invention;

10 FIGURES 2-7 are various planar views of a putter configuration according to one embodiment of the present invention; and

15 FIGURE 8 is a perspective view of the structure and operation of a putter cover which may be used in accordance with the putter head configuration according to one embodiment of the present invention.

FIGURES 9A-9C are various planar views of a putter configuration according to one embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIGURE 1 is perspective view of a putter 10 which comprises a putter head 12 connected to a proximate end of a shaft 14. The distal end of shaft 14 includes a grip connected to the shaft to enable a user to grip the putter 10 securely. Putter head 12 comprises a top face 16, a toe face 18, and a back face 20. Referring to figures 2 and 3, putter head 12 also comprises a heel face 22, a front face 24, and sole face 26. As can be seen in each of FIGURES 1, 2, and 3, the back face 20 may include in certain embodiments a longitudinal slot 28 which may extend from heel face 22 to toe face 18. Slot 28 may be placed roughly in the vertical center of back face 20 and may be on the order of one inch in width measured along the appropriate outer face. Alternatively, the placement of slot 28 could be dependent on the width of lower rail 23 where the width of lower rail 23 is determined as a function of the angle of back face 20 relative to sole face 26. A greater angle may result in a wider lower rail 23 while a smaller angle may result in a relatively less wide lower rail 23. The midpoint of lower rail 23 could be determined by the formula: $[21.336 \text{ millimeters} \times (1 - \sin(\text{angle between sole face 26 and back face 20}))]$ where the distance in millimeters is a vertical measurement from sole face 26 to where the distance intersects back face 20. The calculation of the width of lower rail 23 should allow the center of the impacted area of a ball to be nearly centered between lower rail 23 and upper rail 25 while not touching the back of slot 28. Alternatively, upper rail 25 could be eliminated. Slot 28 is optional and does not substantially alter the way the putter 10

performs. However, as will be discussed herein, the back face 20 may be used by a highly skilled player to strike a golf ball using a reverse swing. Back face 20 could have alternate configurations. For example, the back face 20 might comprise a curved convex surface extending from top face 16 to a bevel 32 at the trailing edge of a sole face 26. Other forms of slots or flanges may also be used. The top face 16 may comprise an alignment mark 17 disposed in substantially the center of putter head 12 that indicates to a user the optimum striking point on front face 24.

The length of putter head 12 from the heel face 22 to the lower edge of toe face 18 may be on the order of 90 to 110 millimeters in length. The height of the putter 12 measured from sole face 26 to top face 16 may be on the order of 26 to 40 millimeters in height. The angle formed by shaft 14 and the top face 16 may be on the order of 10 to 15 degrees and shaft 14 may be offset from the center of top face 16. Alternatively, shaft 14 may be substantially perpendicular to top face 16 and placed in the center of top face 16. The shaft 14 may comprise a conventional steel or graphite shaft having a tip diameter on the order of .37 inches. The angle of the front face 24 with vertical may be on the order of 0 to 10 degrees. Or expressed alternatively the angle of sole face 26 to front face 24 may be on the order of 90 to 80 degrees. The angle of back face 20 with respect to vertical may be on the order of 10 to 60 degrees. According to one embodiment of the present invention the back face 20 has an angle of approximately 36 degrees with reference to vertical which is approximately the loft of a conventional 7-iron club.

The angle of toe face 18 with respect to vertical is on the order of 10 to 20 degrees and will typically comprise the shaft angle plus 0 to 5 degrees. In this manner, when a player grips the end of shaft 14 and lines
5 the toe face 18 in a position to strike the golf ball the position of toe face 18 with respect to the golf ball will be approximately the same as the position of front face 12 with respect to the ball when a conventional grip and position is taken with the golf club 10. In this
10 manner, the toe face 18 may be used by a highly skilled player as an alternative striking surface. In an alternate embodiment, the toe face 18 also comprises a longitudinal slot positioned across the vertical center of toe face 18 similar to slot 28.

FIGURE 2 represents a planar view of the putter head 12 from the heel. FIGURE 3 represents a cross sectional view of the putter head 12. As shown in FIGURE 2, the interface of the front face 24 with the sole face 26 meets in a radius corner 30 which may comprise a radius
15 of approximately 1/8 inch to 3/8 inch in radius. The trailing edge of sole face 26 also includes a trailing edge bevel indicated at 32 in FIGURES 2 and 3. The bevel 32 is on the order of 5 to 7 millimeters in height and on the order of 10 to 20 millimeters in width as shown in
20 FIGURES 2 and 3.

FIGURE 3 illustrates the embodiment discussed previously which includes longitudinal slot 28. The slot 28 may be on the order of 0.25 inch in depth measured horizontally. The sides of slot 28 may be at any angle.

FIGURES 4 and 5 illustrate top and bottom views of the putter head 12 respectively. Similarly, FIGURES 6 and 7 illustrate back and front views of the putter head

12 and shaft 14, respectively. As shown in FIGURES 6 and 7, the radius 30 may extend around the toe of the putter head 12 such that the interface of the toe face 18 and the sole face 26 and bevel 32 are similarly radiused.

5 According to one embodiment of the present invention the putter head 12 comprises a Grade 5 titanium alloy designated as a ASTM B348 comprising 6 percent aluminum, 4 percent vanadium with the balance comprising titanium. This material will result in a putter head having a
10 weight on the order of 380 to 400 grams, which will result in an overall club weight of approximately 600 grams. This relatively heavy weight and the relatively upright lie of the shaft 14 with respect to the top face 16 promotes the pendulum-type putting stroke which
15 reduces the role of the wrists and the hands in the stroke and encourages the use of the larger muscles of the arms and shoulders. According to this embodiment the length of putter head 12 from the heel face 22 to the lower edge of toe face 18 may be, for example, 110
20 millimeters in length. The height of the putter head 12 measured from sole face 26 to top face 16 may be, for example, 28 millimeters in height. The bevel 32 may be, for example, 5.5 millimeters in height and, for example, 13 millimeters in width. The lower edge of back slot 28
25 may be placed, for example, 7 millimeters from the trailing edge of bevel 32.

 In an alternative embodiment of the present invention the putter head 12 comprises 17-4 stainless steel. According to this embodiment the length of putter
30 head 12 from the heel face 22 to the lower edge of toe face 18 may be, for example, 105 millimeters in length. The height of the putter head 12 measured from sole face

26 to top face 16 may be, for example, 28 millimeters in height. The bevel 32 may be, for example, 6 millimeters in height and, for example, 13 millimeters in width. The lower edge of back slot 28 may be placed, for example,
5 6.5 millimeters from the trailing edge of bevel 32.

FIGURE 8 illustrates the use of a novel putter head cover 40 with the putter 10 of the present invention. Putter head cover 40 may comprise, for example, semi-rigid plastic material, vinyl, leather, or covered metal,
10 or other suitable material. Putter head cover 40 is shaped to fit closely around the various faces of putter head 12. Putter head cover 40 includes a shaft detent 42 shown in FIGURE 8. In operation, the putter head 12 is inserted into an open end indicated generally at 44 until
15 the detent 42 snaps into place as it is engaged around shaft 14. Detent 42 may comprise a piece of rigid plastic or metal formed in the shape of an open cotter pin as shown in FIGURE 8.

According to one embodiment of the present invention
20 the putter head cover 40 comprises a material which is rigid enough to guard the remaining clubs in a golf bag from the sharp edges of putter head 12. Due to the weight and the material of putter head 12 and especially due to the trailing edge where back face 20 and bevel 32
25 meet, the putter head 12 could cause serious damage to the shafts of other clubs in a golf bag if it was left uncovered. In addition, conventional putter head covers are typically manufactured from soft pliant material which may not be sufficiently durable if used to cover
30 the putter head 12 described herein.

Figures 9A, 9B, and 9C are three views of an alternate embodiment of the invention. Putter head 50 is

slightly different than putter head 12, previously described, because of the addition of toe bevel 64, heel bevel 66, and the configuration of back slot 68. Putter head 50 comprises a top face 52, a toe face 54, and a back face 56. Referring to figure 9A, putter head 50 also comprises a heel face 60, a front face 62, and sole face 58. The interface of heel face 60 with sole face 58 may be beveled as indicated at heel bevel 66 in FIGURES 9A and 9B. The heel bevel 66 may be on the order of 5 to 14 millimeters in height at an angle of 20 to 45 degrees to the sole. Additionally, the interface of toe face 54 with sole face 58 may be beveled as indicated at toe bevel 64 in FIGURE 9B. The toe bevel 64 may be on the order of 5 to 14 millimeters in height at an angle to the sole of 20 to 45 degrees. Back slot 68 differs from slot 28, previously described, as the sides of back slot 68 may be parallel to sole face 58 and top face 52 as indicated in FIGURE 9A, or the sides of back slot 68 may be perpendicular to back face 56.

According to one embodiment of the present invention the putter head 50 comprises a Grade 5 titanium alloy designated as a ASTM B348 comprising 6 percent aluminum, 4 percent vanadium with the balance comprising titanium. This material will result in a putter head having a weight on the order of 380 to 400 grams, which will result in an overall club weight of approximately 600 grams. This relatively heavy weight and the relatively upright lie of the shaft 14 with respect to the top face 16 promotes the pendulum-type putting stroke which reduces the role of the wrists and the hands in the stroke and encourages the use of the larger muscles of the arms and shoulders. According to this embodiment the

length of putter head 50 from the heel face 60 to the lower edge of toe face 54 may be, for example, 110 millimeters in length. The height of the putter head 50 measured from sole face 58 to top face 52 may be, for example, on the order of 32 millimeters in height. The bevel 74 may be, for example, on the order of 6 millimeters in height as measured from sole face 58 and, for example, 13 millimeters in width. The lower edge of back slot 68 may be placed, for example, on the order of 6.35 millimeters from the trailing edge of bevel 74 along back face 56. Toe bevel 64 and heel bevel 66 may be on the order of approximately 6 millimeters in height and width.

In an alternative embodiment of the present invention the putter head 50 comprises 17-4 stainless steel. According to this embodiment the length of putter head 50 from the heel face 60 to the lower edge of toe face 54 may be, for example, 105 millimeters in length. The height of the putter head 50 measured from sole face 58 to top face 52 may be, for example, 28 millimeters in height. The bevel 74 may be, for example, on the order of 6 millimeters in height as measured from sole face 58 and, for example, on the order of 13 millimeters in width. The lower edge of back slot 68 may be placed, for example, 6.35 millimeters from the trailing edge of bevel 74 along back face 56. Toe bevel 64 and heel bevel 66 may be on the order of approximately 5.6 millimeters in height and width.

Accordingly, a unique putter head configuration and putter is described which promotes a more repeatable wrist-less putting action. The putter head allows for conventional putting strokes using the front face as well

as allowing highly skilled players to take shots using a reverse swing on the back face and using a conventional swing but striking the ball with the toe face or heel face of the putter. All of these various shots benefit
5 from the weight and the juxtaposition of the shaft angle with the various face angles of the faces of the putter head.

According to another aspect of the present invention, two or more putters of the same dimensions and the same design, but with putter heads made of materials
10 of different densities, could be packaged together and sold as a set. A relatively high-density material putter head with a relatively upright lie of the shaft with respect to the top face could promote the pendulum-type
15 putting stroke which reduces the role of the wrists and the hands in the stroke and encourages the use of the larger muscles of the arms and shoulders. A relatively low-density material putter head with a relatively less upright lie of shaft with respect to top face would allow
20 for more wrist action which may be desirable for long distance shots. The face angles of the putter heads could also be varied to accommodate a greater variety of putting circumstances. Selling the putters as a set would allow a golfer the choice of which putter is more
25 appropriate for the circumstances of a particular putt.

Although the present invention has been described in detail it should be understood that various changes, modifications, alterations and substitutions may be made to the teachings described herein without departing from
30 the scope of the present invention which is solely defined by appended claims.